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We regret that the author did not abandon the term frond, which our present knowledge of the comparative anatomy of plants ought to soon render obsolete. *Frond* and *stipe* ought not to be tolerated longer; we should say *leaf* and *petiole;* for a "frond" is only a leaf and a "stipe" is only a petiole.

In the chapter on "The Fern's Place in Nature," the author adopts the term Spermaphyta for the flowering plants, and gives an excellent list of systematic works for the different classes of the vegetable kingdom.—*Charles E. Bessey.*

ZOOLOGY.

AMERICAN NEMATOGNATHI.—The peculiar connection between the air-bladder and hearing apparatus of the Nematognathi has received considerable attention from comparative anatomists. Cetopsis, the families Argeidæ, Loricariidæ, Callichthyidæ, and Hypophthalmidæ were said by Johannes Müller and by Valenciennes to be destitute of an air-bladder, and consequently of the auditory ossicles. Reisner, Day, Sagemehl, and Wright have successively proved the presence of an air-bladder encased in bone in all the forms except Cetopsis. In connection with a Revision of the South American Nematognathi we have examined Cetopsis, and have also made observations on the Loricariidæ, Callichthyidæ, Hypophthalmidæ, Siluridæ, Pygidiidæ, and Bunocephalidæ. Cetopsis agrees in general with the Pygidiidæ (=Trichomyteridæ). The enclosure of the air-bladder in a bony capsule in the Nematognathi of America instead of being the exception is the rule, modifications of the enclosed air-bladder being the case in all the families but the Siluridæ and Bunocephalidæ (=Aspredinidæ).

A hint as to the method by which the air-bladder was enclosed may be detected by a comparison of Ageneiosus and Hypophthalmus. In Hypophthalmus the air-bladder is half bony, half membranaceous, the bony portion being attached to the modified vertebræ; the whole air-bladder is surrounded above and behind by the lateral processes of the modified vertebræ, below partly by lateral processes of the vertebræ, mostly by the processes connecting the scapula with the basioccipital, anteriorly partly by the expanded scapula. The scapular process in Hypophthalmus extends from the basioccipital backward and outward. If now the coalesced vertebræ could be lengthened so as to separate the scapular process from the lateral processes almost the exact conditions would be obtained which are found in Ageneiosus. Like Hypophthalmus, the air-bladder of Ageneiosus has a bony base, the membranaceous portion being restricted to a membrane stretched across the opening of the bony capsule; the whole air-bladder is likewise surrounded above and behind by the lateral processes of the modified vertebræ and anteriorly partly by the scapula, but the coalesced vertebræ are much longer than in Hypophthalmus, and the lateral processes and scapular process are widely separate below.

Many changes in the classification of the Nematognathi have been found necessary. The Bunocephalidæ (=Aspredinidæ) usually associated with the Loricariidæ have no skeletal affinities with that family, being much more nearly related to the Siluridæ. The genus Cetopsis, as before stated, is more closely related to the species of Pygidiidæ (=Trichomycteridæ) than to the species of Doradinæ, with which it has usually been associated. The genera Heptapterus and Nannoglaris, on the contrary, are closely related to some of the species of Günther's Pimelodus, and have no real affinity with the Pygidiidæ.

Perhaps the most interesting of the South American cat-fishes is *Diplomystes papillosus*, Cuv. and Val. It differs from all other cat-fishes in having *a well-developed maxillary bone* bearing a band of teeth and forming the sides of the jaw. This species has no barbels excepting one short one on each maxillary. It is nearly related to Tachisurus Lacépède (=Arius), and in many ways represents a primitive fish; it may be the remnant of the parent cat-fishes formerly distributed more widely over South America, but now crowded by the more specialized forms, out of the waters inhabited by them to Chili, where it has to contend with the species of Pygidium only.

The relationships of the American families may be seen from the following key:—

(*a*) Air-bladder simple or with transverse constrictions (except in Ageneiosus) lying free in the abdominal cavity. Mouth terminal; intestines short, arranged in longitudinal folds. Body naked or with a single series of lateral plates; diaphragm membranaceous; dorsal fin short; confined to the abdominal portion of the vertebral column.

(*b*) Opercle none; adipose fin none; neural spines of the coalesced vertebræ forming a ridge from the occipital to the dorsal fin. Caudal vertebræ greatly compressed; their neural spines expanded. .... *Bunocephalidæ.*

(*bb*) Opercle well developed and movable; adipose fin normally present; occipital process sometimes forming a bony bridge from occipital to the dorsal plate. Caudal vertebræ normal; the neural spines spine-like.. *Siluridæ.*

(*aa*) Air-bladder rudimentary; one on either side of the coalesced vertebræ, and entirely surrounded by a bony capsule.

(*c*) Air-bladder capsule formed by the scapula, the process connecting the scapula with the basioccipital and by the lateral processes of the coalesced vertebræ, its external opening bounded by the scapula and lateral processes; adipose fin small; dorsal fin on anterior half of body, over anal; anal long.......*Hypophthalmidæ.*

(*cc*) Air-bladder capsule formed by the lateral processes of the anterior vertebræ only. No adipose fin; dorsal fin usually on caudal portion of vertebral column; anal short..........*Pygidiidæ.*

(*ccc*) Air-bladder capsule formed by the skull and transverse processes of anterior vertebræ; diaphragm partly or wholly osseous, formed by the expansion of the clavicle and scapular process. Scapula and its process firmly joined to the skull; gill membranes joined to the isthmus.

(*d*) Derm naked; mouth inferior; lower lip reverted; teeth bicuspid, in several series........ ....*Argeidæ*

(*dd*) Derm with bony plates.

(*e*) Caudal vertebral compressed, the neural and hæmal spines expanded, forming a continuous ridge above and below. Sides with several series of plates; mouth inferior; lower lip reverted; teeth turned abruptly back above, a single series erect, the intermaxillaries and dentaries box-shaped, filled with numerous depressed relay teeth; intestinal canal coiled. Cavity of air-bladder usually communicating with the exterior at a notch in the posterior margin of temporal plate at beginning of lateral line..........*Loricariidæ.*

(*ee*) Caudal vertebræ normal, the neural and hæmal spines spine-like and separate. Sides with two series of plates; mouth terminal; lower lip not reverted; teeth villiform; cavity of air-bladder communicating with the exterior by means of a long narrow slit in the temporal plate..*Callichthyidæ.*
—*C. and R. Eigenmann.* (*Mus. Compar. Zoölogy, Cambridge, Mass.*)

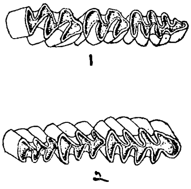
DESCRIPTION OF A NEW RED-BACKED MOUSE (EVOTOMYS DAWSONI) FROM THE HEADWATERS OF LIARD RIVER, NORTHWEST TERRITORY.—Dr. George M. Dawson, Assistant Director of the Geological and Natural History Survey of Canada, has kindly sent me for determination a red-backed mouse collected by him June 23d, 1887 at Finlayson River, one of the northern sources of Liard River, in lat. 61° 30′ N.; long. 129 30°′ W.; altitude, 3,000 feet.

So little is known of the small mammals of this remote and inaccessible region that it is not particularly surprising to find that the mouse collected by Dr. Dawson proves to be undescribed. In some respects it is intermediate between the circumpolar *Evotomys rutilus* and its more southern congener, *Evotomys gapperi.* But since it differs from both and no intermediate forms are known, it must be regarded as specifically distinct. Hereafter, should intergrades be discovered, it may be necessary to consider it a sub-species. It may be characterized as follows:—

EVOTOMYS DAWSONI sp. nov.

Dawson's Red-backed Mouse.

Type in Museum of Geological and Natural History Survey of Canada, at Ottawa. From Finlayson River, a northern source of Liard River, N. W. T. (lat. 61° 30′ N.; long. 129° 30′ W.; altitude, 3,000 feet). Size, about equal to that of *Evotomys gapperi.* Measurements from mounted specimen (apparently well mounted and not at all stretched): Head and body, 75 mm.; tail vertebræ, 28 mm.—pencil, 8 mm. (total, 36 mm.); ears, from crown, 7 mm. Tail shorter and thicker than in *gapperi,* but longer and slimmer than in *rutilus,* in this respect (but no other) agreeing with a specimen collected at Fort Liard by Kennicott (No. 4,562, U. S. National Museum). The hind foot is intermediate between that of *rutilus* and that of *gapperi,* being thicker than in *gapperi,* but not so thick as in *rutilus.* The ears conspicuously overtop the fur, fully equalling those of gapperi. The tail is bicolor, the yellowish of the under part occupying a little more than half of the circumference. It is well haired, and the terminal pencil is nearly black above (and 8 mm. long). The red dorsal stripe begins just behind the eyes and extends to the root of the tail. In color it is bright chestnut—not far from ferruginous; the sides are tawny gray, and the belly is strongly washed with ochraceous buff. The admixture of black-tipped hairs is as great as in *gapperi* and it is very much more conspicuous, owing to the lighter ground-color of the back and sides. The result is a sort of "peppery" appearance not seen in any other representative of the genus. There is a tolerably well-defined whitish post-auricular spot—an exaggeration of the pale blotch sometimes seen behind the ear in *rutilus.* The whiskers are black and white; they reach back to the shoulders, instead of stopping at the occiput, as usual in the genus. A blackish stripe, bordered below with fulvous, runs from the base of the whiskers to the tip of the nose. The projecting margin of the ear is well covered with reddish hairs, brightest on the interior of the auricle.



Molar teeth of *Evotomys dawsoni.* Merriam. 1, right upper molar series; 2, left lower molar series.

Cranial and Dental Characters. — Unfortunately, the skull was badly smashed and part of it altogether wanting; hence no cranial characters can be made out. The teeth, however, remain, and are represented in the accompanying cut. Their most marked peculiarity, compared with those of *gapperi*, consists in the openly-communicating loops. The upper molar series measures 4.5 mm. on the crowns, 4.8 mm. on the alveolæ. The lower molar series measures 4.4 mm. on the crowns, 4.6 mm. on the alveolæ.

I take great pleasure in bestowing upon this handsome mouse the specific name *dawsoni*, as a slight recognition of the indefatigable zeal of its discoverer, the distinguished explorer and geologist, Dr. Geo. M. Dawson, who has added so much to the fund of knowledge relating to Northwestern Canada.—*C. Hart Merriam.*

ZOOLOGICAL NEWS—GENERAL.—F. Koenike records (*Abh. Nat. Ver. Bremen.*, X.) the finding of the Myriapod *Geophilus sodalis* in a hen's egg.

PROTOZOA.—Dr. A. C. Stokes gives a generic synopsis of the sedimentary fresh-water peritrichous Infusoria in the *American Monthly Micros. Journal*, IX., p. 59.

CŒLENTERATES.—Dr. Benjamin Sharp records (*Proc. Acad. Nat. Sci.*, Phila., 1888, p. 82) the finding of the common ctenophore, *Mnemiopsis leidyi* in a pond of fresh water in Nantucket. They appeared perfectly healthy and active and were phosphorescent at night. The pond was occasionally opened to the sea to allow the escape of the perch which bred in it; but at the time of the observation the water in which the jelly-fish were swimming was perfectly fresh to the taste.

WORMS.—Dr. Otto Seifert has a paper on the pathological effects of the human parasite, *Ankylostomum duodenale*, in the *Verhandlungen* of the Phys. Med. Gesellschaft, of Würzburg (XXI.). This is the worm which was first brought into prominence at the time of the building of the St. Gothard tunnel, when it produced the disease in the workmen known as Gothard or tunnel disease.

MOLLUSCS.—Dr. W. D. Hartmann communicates to the *Proceedings* of the Philadelphia Academy (1888, pp. 14–56) catalogues of the known species of the genera Auriculella and Achatinella, of the Hawaiian Islands. The account of the latter genus is prefixed by a *résumé* of our knowledge of the individual variation and the local distribution of the species.

Mr. B. H. Wright describes (*Proc. Acad. Nat. Sci.*, Phila., 1888, p. 113) seven new species of Unionidæ from Florida. Each specific name is dedicated to some friend of the describer.

Dr. E. von Martens describes (*Stzb. Gesellsch. Naturf. Freunde*, Berlin, 1887, p. 106) two new species of Unio (*U. percompressus* and *U. microdon*, from Guatemala.

CRUSTACEA.—Dr. A. Walter describes (*Bull. Soc. Imp. Nat.*, Moskau, 1887) two new phyllopods (*Apus hæckelii* and *Artemia asiatica*) from the Russian Transcaspian province.

The species of the genus Podon are reviewed by Poppe in the *Abhandl. Nat. Verein zu Bremen*, Bd. X. A new species (*P schmakeri*) is described from Shanghai, China.

C. F. Lutken has a paper on the whale-lice (Cyamus) in *Vidensk. Selsk. Skr. Kjobenhaven*, IV. He points out the identity of certain species described by Dall with those of previous authors, and re-describes, with a full-page plate, Dall's *Cyamus scammoni.*

Carl Bovallius, (notes on the family Asellidæ, communicated to the Royal Swedish Academy of Science, December 9th, 1885,) makes the family to consist of thirteen genera, three of which, Iamna, Iathrippa and Iais, are new. The two forms of Iamna were formerly referred to Iaera; Iathrippa is formed to receive *Janira longicauda*, while Iais includes the new species *I. hargeri* and the *Jaera pubescens* of Dana.

ARACHNIDA.—Herr Doenitz describes (*Stzb. Gesellsch. Naturf. Freunde*, Berlin, 1887) the habits of two new trap-door spiders of Japan, belonging to the genera Atypus and Pachylomerus. *P. fragaria*, unlike the rest of the genus, excavates its tubes in the soft bark of the camphor-trees or of the cypress (Cryptomeria) and closes it with a door, which it carefully covers with moss like that covering the rest of the tree. Doenitz also describes (*l.c.*) the copulatory habits of a Japanese species of Linyphia.

S. A. Poppe communicates to the *Abhandlungen* (Band X.) of the Scientific Union of Bremen a valuable review of the parasitic mites belonging to the families Sarcoptidæ and Chelytidæ. The paper contains, among other things, a catalogue of all the known species of bird-mites (Analgesinæ), arranged according to hosts.

Joseph L. Hancock describes (*Proc. Am. Phil. Soc'y*, XXV., 107) a new species of Datames (*D. magna*) from Laredo, Tex.

Dr. H. C. McCook, in a recent visit to London, found the original drawings by John Abbott which formed the basis of Baron Walckenaer's descriptions of the American species of spiders. He gives the results of his studies of these drawings and the conflicts of priority of nomenclature between Hentz and Walckenaer in the *Proceedings* of the Philadelphia Academy (1887, p. 74).

BIRDS.—Mr. F. A. Lucas (*Auk*, V.) gives a historical sketch of Bird Rocks, in the Gulf of St. Lawrence, and describes a recent visit to the place.

Dr. Elliott Coues proposes (*Auk*, V., 207) the term Corydomorphæ for a super-family of birds, embracing the larks (Alaudidæ), which is distinguished from the other passerine birds by the non-oscine scutelliplanlation.

Dr. R. W. Shufeldt continues his studiës of the pterylosis of birds by describing the feather-tracts (*Auk*, V., 212) of certain of the woodpeckers.

From notes on the fauna of Corea, by H. H. *Giglioli* and T. Salvadori, as well as from a list of birds collected by M. Kalinowski, and described by L. Taczanowski (*P. Z. S.*, Dec., 1887), it appears that a close affinity exists between the Corean and Japanese faunas. The greatest rarity mentioned by the former authors is *Cyngus davidi*, of which two specimens were obtained. According to M. Kalinowski, Corea is very poor in birds, three-fourths of which are only birds of passage. Only one new species (*Thriponax kalinowskii*) is described, and three others were for the first time found on the Asiatic Continent.

Mr. P. L. Sclater describes (*P. Z. S.*, Jan., 1887) ten new species of Tyrannida from various parts of South America.

Mr. K. B. Sharpe (*P. Z. S.*, 1887) describes *Carpophaga whartoni*, a new species of fruit-pigeon from Christmas Island; also, from the same island, a thrush, whose nearest ally is a West African species.

MAMMALS.—The officers of H. M. S. Flying-Fish collected at Christmas Island, a coral island 190 miles from the nearest point of Java, two species of Mammalia, viz.: a new species of Flying-Fox (*Pteropus natalis*), and the large rat *Mus macleari.*

Although the true zebra is now a rare animal, it appears from a letter published in the *Field*, Dec., 1886, by Mr. H. A. Brydon, that it still inhabits the most remote and rugged ranges of Cape Colony, such as the Winterhoek Mountains and the Zwartberg.

W. H. Flower (*P. Z. S.*, Dec. 6th, 1887) denies the right to generic rank of the pigmy Hippopotamus of Liberia, asserting that the greater relative size of the brain cavity, orbits, and auditory bullæ in the Liberian animal, are similar in their nature to those which always occur between the large and small members of the same genus. The characters used to distinguish the genus Chorropsis, to which it is referred are, however, dental.